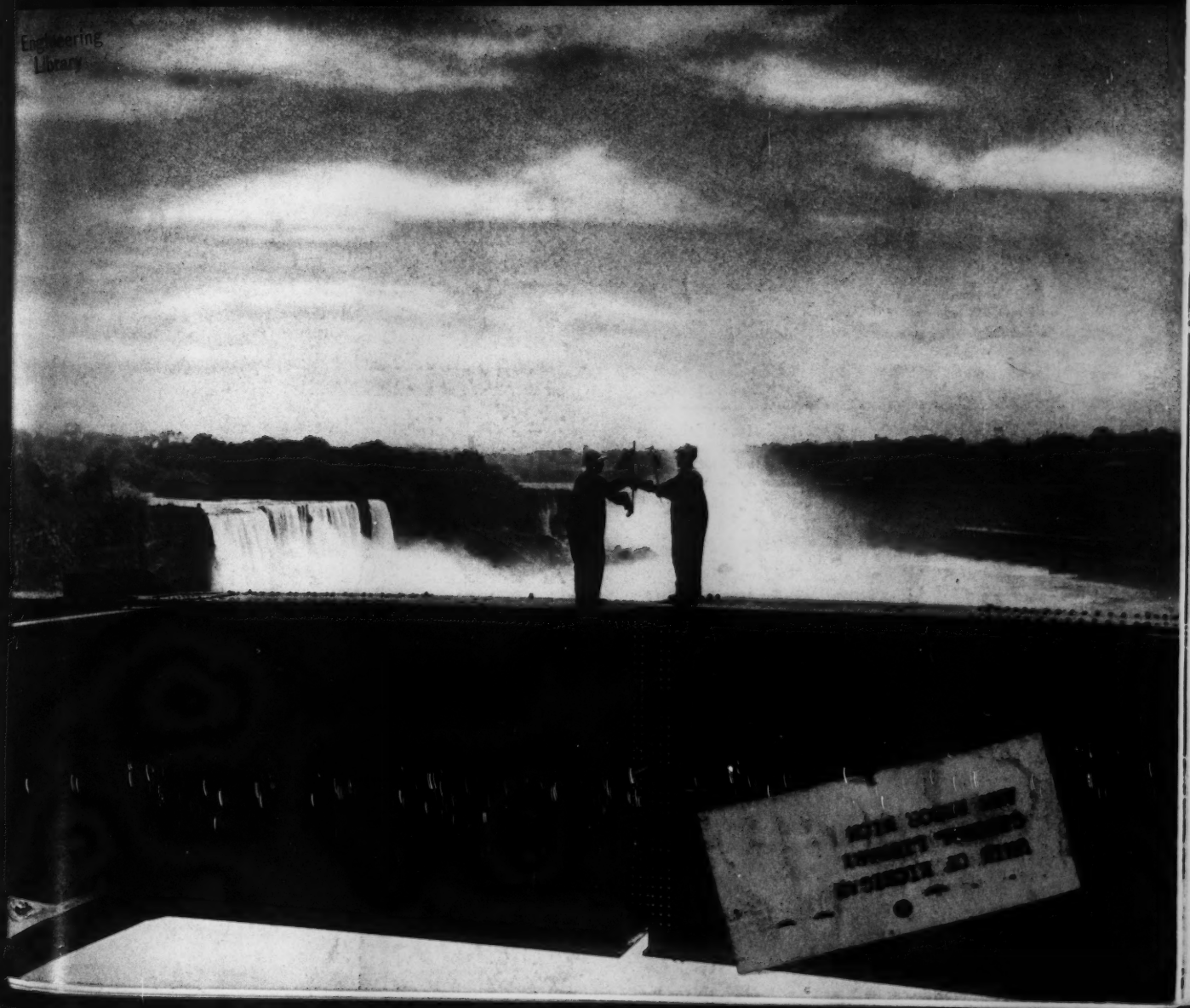
# ENGINEERING NEWS-RECORD

U. S. and Canada joined as last arch section is placed in Rainbow Bridge at Niagara Falls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41-4

# BARBER GREENE

STANDARDIZED MATERIAL HANDLING MACHINES

AURORA ILLINOIS

# The Week In Engineering and Construction

ENGINEERING NEWS-RECORD • MAY 29, 1941

# Another big defense program seen a few weeks away

## Immense new schedule of munitions plants and cantonments expected; engineering contracts already awarded for nine jobs in new training camp program.

As far as construction is concerned, the defense program at the moment is in the trough between two waves of activity. But a new wave seems to be only a few weeks away. Construction, the quickest part of the armament drive, got going last fall in a rush of contract-letting for cantonments, munitions plants, and naval shore facilities, principally. By the beginning of this year most of the contracts then contemplated had been let. The level of contract awards dropped from a high of $140,568,000 per week in October 1940, to $81,874,000 per week for the month now ending.

By now most of the cantonment work is drawing to a close, and many of the plant construction jobs are nearing completion—marking the end of the tooling up phase of defense. Symptomatic is the steady increase the last month or so in construction workers on the rolls of the U. S. Employment Service. Of some 365,000 men listed as available in defense trades, nearly half are construction workers.

### Armament to be doubled

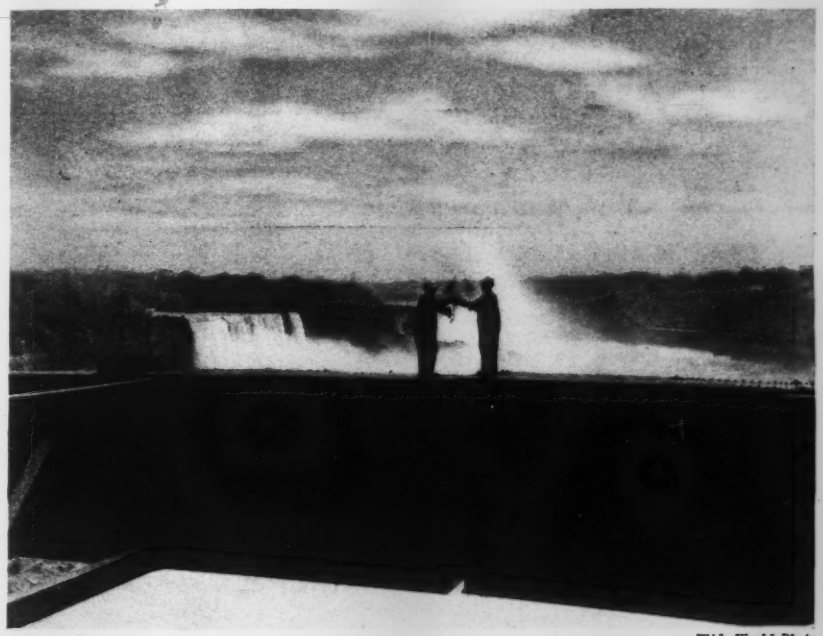
This comparatively low level of activity, however, is only temporary. Immense new schedules of armament, more than doubling the plans of last fall, have been in the planning stage for several months now. In fact, the new plans have been stepped up twice before they got into action—once by the lend-lease program and again in the current move towards a war-strength army of which the President's recent announcement of a new bomber program is one phase.

For a variety of reasons, the new program has been disturbingly slow in getting into action. But the Administration and the Office of Production Management are turning increasing heat on the services to get going (the bomber announcement was an example of this), and contracts should be in negotiation within a few weeks. Award of engineering contracts on nine new cantonment sites, as reported elsewhere in these pages, is an indication of quick action to come.

For the construction industry, the coming program has two main parts—cantonments and munitions plants. It is by now an open secret that a great expansion in the size of the Army beyond the presently scheduled 1,500,000 men is coming soon. First plans to go to 2,200,000-2,800,000 men have been revised upward toward 4,000,000 men. This is going to involve a cantonment program bigger than the last one and costing better than two billions over the next 1½-2 years.

### Camp money not available

No money, except engineering, is yet available for the new cantonments. Request for money waits, presumably, like many more spectacular moves, until President Roosevelt feels that public opinion is ready. Meanwhile, the delay is giving the



Wide World Photo

## Rainbow Bridge arch ready for closure

*The American and Canadian halves of the 950-ft. span Rainbow Bridge being built at Niagara Falls, N. Y., were brought near enough together last week that workmen could transfer flags in a symbolic ceremony. But no stresses can be transferred across the gap until the final section, a key about 1 ft. wide, is inserted. The keys for the two ribs are still at the fabricating plant and cannot be finished until the exact required dimensions are determined from measurements of the gaps. These measurements, in turn, await the installation of hydraulic jacks which will open up the gaps until the calculated moments and thrusts are induced in the ribs.*

*The Rainbow Bridge, longest fixed arch in the world, is being fabricated and erected by the Bethlehem Steel Co. Consulting engineers for the Niagara Falls Bridge Commission, the owners, are Edward P. Lupfer Corp., Buffalo, and Waddell & Hardesty, New York City, the latter being in charge of the design. Aymar Embury II, New York City, is consulting architect.*

Quartermaster Corps time for a better planning job than was possible last year.

For the munitions plant program money—some two and a half billion—has been available for several months. Delay in getting started is chargeable to technical factors rather than the political motives which appear to be holding up cantonments. Laying out of the plant program involves a multitude of decisions as to the relative proportions of powder, bombs, shell, tanks, planes, and the like. These decisions have been disrupted as soon as made by the upward revisions of plans. Moreover, they are subject to constant change with fluctuations of the war; thus, shipyards assumed greater importance and tank factories less when the British were driven out of Europe. A serious difficulty too has been to find operators for the new plants since nearly all firms accustomed to making armament now have their supervisory forces strained to the limit.

How soon the plant program as a whole will be under construction is problematic. The airplane portion is likely to be in the contract-letting stage very soon.

To these two major programs must be added, in any estimate of pending work, about a billion dollars worth of public works arising from defense, such as, housing, municipal facilities, and roads.

Farther in the future is a big expansion of naval shore facilities in the Atlantic, including some perhaps in South America or Africa. The half billion or so of work now underway at these bases is preliminary or mainly for servicing of aircraft and light vessels, and will have to be supplemented with major fleet facilities.

## More TVA power and storage dams expected

Developing power shortages in the southeast emphasize the probability that the Tennessee Valley Authority's program of developing new dam sites will be substantially expanded. No money has yet been asked of Congress, but TVA is already getting set for a big program. It is in the market for large quantities of dam building equipment—earthmoving and concreting—beyond that needed for its present program. Most prominently mentioned in Washington is the Fontana Dam project, which Aluminum Co. had planned to build until difficulty developed with the Federal Power Commission. The Aluminum Co. announced it would welcome development of the site by some federal agency.

A number of other dam sites, however, are understood to be under active consideration. Press reports have emphasized the possibilities of the Cumberland River but informed sources believe that quick power can be more readily obtained by a series of dams on the French Broad River above Knoxville.

T. B. Parker, chief engineer of the Tennessee Valley Authority, has verified a report that TVA engineering and land acquisition forces are looking over sites as follows: a power dam on the Hiwassee River near Appalachia, a storage dam above Hiwassee Dam on the Hiwassee River in western North Carolina; a power dam on the Ocoee River above the former Tennessee Electric Power Co's, Ocoee Dam No. 2 in eastern Tennessee; and a storage dam on the Nottely River in north Georgia.

## Building firms exempt from new OPM controls

Nearly all construction firms are exempt from the new inventory controls established over metals by the Office of Production Management, according to a revision of the plan announced this week. Under the new interpretation, parts to go into a structure are considered as finished goods if there are no substantial manufacturing operations still to be done on them; inventories of finished goods are not subject to control.

Thus a contractor who maintains a stockpile of I-beams or reinforcing bars is considered as storing finished goods, even though he may have to cut them to length before using them. Therefore, he need not furnish his supplier with a sworn statement that he is holding his inventories to reasonable figures. If he is asked for such a statement by his supplier, he can draw the suppliers attention to the change in regulations and if necessary can appeal for a ruling to J. J. Martin, chief of inventory control, priorities division, OPM.

Contractors will find themselves further relieved of red tape by a new ruling that warehousemen are customers rather than suppliers and that therefore users who buy from warehouses are exempt from inventory control.

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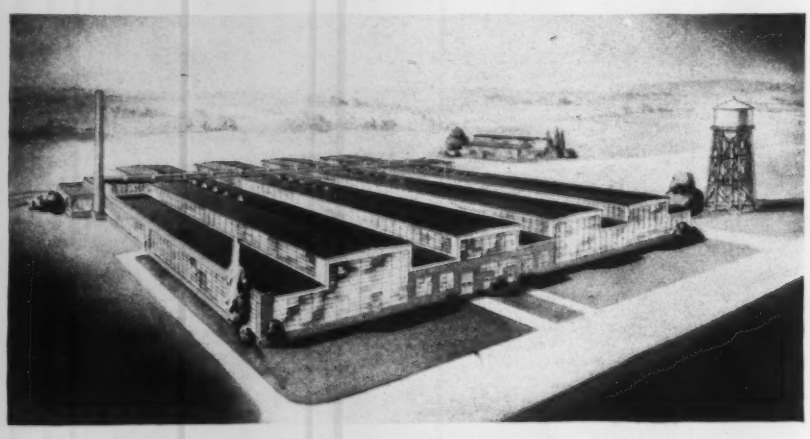
## Canadian bill restricts ordinary building work

Munitions Minister Howe of Canada has announced that the proposed legislation for the restriction of ordinary building operations in that country has now been implemented by the passing of an order-in-council prohibiting all such projects except when carried out under license issued by the priorities officer of the Canadian department of munitions and supply, R. C. Berkinshaw of Toronto. Buildings and machinery for use in primary industries, farming, logging, mining and fishing are exempted from license. So too are dwelling houses, but not apartment houses. Permits will not be necessary for building repairs not to exceed $2,500, installation of equipment costing not over $5,000, and for new buildings the cost of which does not exceed $10,000.

The restrictions are to apply to all commitments made or work initiated prior to April 29 of this year, the day on which the Canadian budget was introduced with provision for the above restrictions. The objects of the restrictions are conserving foreign exchange; controlling the demand for labor, new facilities and materials necessary for war work; and the postponement of such demands until the post-war period in order to maintain employment and economic activity at that time.



## Modern foundry of all-welded steel construction

*First unit to be completed in an extensive building program by the Aluminum Industries, Inc., Cincinnati, Ohio, this modern foundry has an area of 150,000 sq.ft. with a capacity of 2,225,000 lb. of castings per month. The plant will be devoted entirely to the production of magnesium and aluminum alloy castings for basic defense industries. Of all-welded structural steel and face brick construction, with high continuous bands of sash on all sides, the plan provides for four 50 ft. monitor bays with five intermediate 30-ft. bays.*

*The Austin Company of Cleveland, Ohio, are designers and builders.*

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# Engineering contracts awarded for nine new army cantonments

***No money authorized for construction which will require action by Congress. Expansion program being developed from comprehensive design studies.***

The War Department has announced nine awards of architectural and engineering contracts for the preparation of advanced plans and layouts for the nine new triangular division camp sites which were announced on May 14. As stressed in the previous announcement, this is a step in the War Department planning program for preparation against any emergency which may necessitate additional increases in the strength of the Army. No money has been authorized for construction of cantonments and no further expansion will take place unless so ordered by Congress. It is estimated that the cost of these camps, when and if constructed, will be approximately $23,000,000 each.

The engineering contracts were approved by the Office of Production Management. The contracts and the sites which are involved in each instance follow:

| ARCHITECT-ENGINEER | SITE |
|---|---|
| Wiley & Wilson, Lynchburg, Va. | Blackston, Va. |
| Charles H. Hurd, Indianapolis, Ind. | Columbus, Ind. |
| J. B. McCrary Engineering Corp., Atlanta, Ga. | Augusta, Ga. |
| Holway & Cochrane, Tulsa, Okla. | Cookson Hills, Okla. |
| Burns & McDonnell Engineering Co., Kansas City, Mo. | Neosho, Mo. |
| Black & Veatch, Kansas City, Mo. | Fort Smith, Ark. |
| Leeds, Hill, Barnard & Jewett, Los Angeles, Calif. | Santa Maria Lompoc, Calif. |
| John W. Cunningham & Associates, and Lawrence & Allyn, Portland, Ore. | Eugene, Ore. |
| Myron Hunt & H. C. Chambers, Los Angeles, and Blackie & Wood, San Francisco | Medford, Ore. |

### General procedure

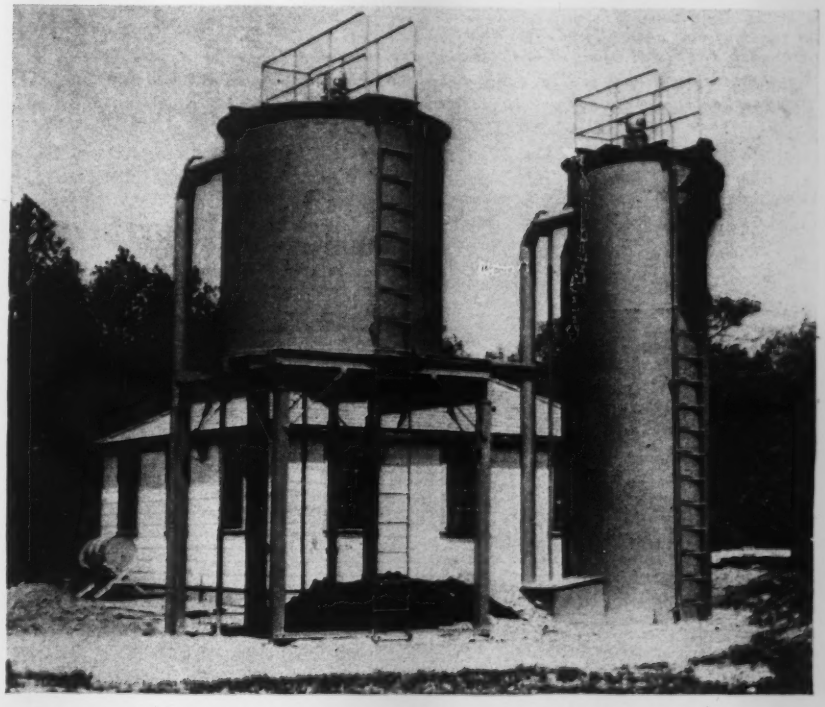
The program for future cantonments, if and when built, follows a procedure differing from that used in the construction of the camps already completed. The modified plan results from experience gained in the original camp program, combined with the fact that more time is available for study and design.

At present the constructing quartermasters of the nine zones make preliminary investigations of suitable cantonment locations, including site surveys and availability of facilities. Resulting preliminary selections are transmitted to Washington, with all available data, and are analyzed by military authorities, to determine one or several locations within the zone, which are adequate for military requirements. These selections are then submitted to the Quartermaster General's office for detail technical study on engineering and construction aspects. This study will either confirm the first choice of the military, or may indicate the engineering problems involved, with recommendation for one of the alternative sites. Plans then are returned for the final decision of the Army.

When any of these cantonments is selected for detail engineering work at the site, as the nine previously mentioned, an architect-engineer is selected from available firms in the region, and a contract for the engineering work is negotiated. Based on standardized plans for the required buildings at the camp, and specifications for such elements as camp development, water supply and sewage disposal, the architect-engineer proceeds with detail layout and design. This is the status of the nine proposed cantonments listed in the foregoing. Present plans indicate the same procedure will be used for any future extension of the Army camp program.

### Competitive bids

Construction of the camps, according to present plans, will be carried out by contracts obtained by taking competitive bids, based on detailed plans prepared by the architect-engineer and approved by the office of the Constructing Quartermaster.



## Philadelphia ozone test plant in operation

*An experimental installation to determine the efficiency of ozone as a "sweetener" of Philadelphia water is now in operation at the Lower Roxborough filter works. This pilot plant, built at a cost of $25,000, is treating one million gallons of water daily. Raw water, coming from the Schuylkill River, is said to have an obnoxious chlorophenol taste.*

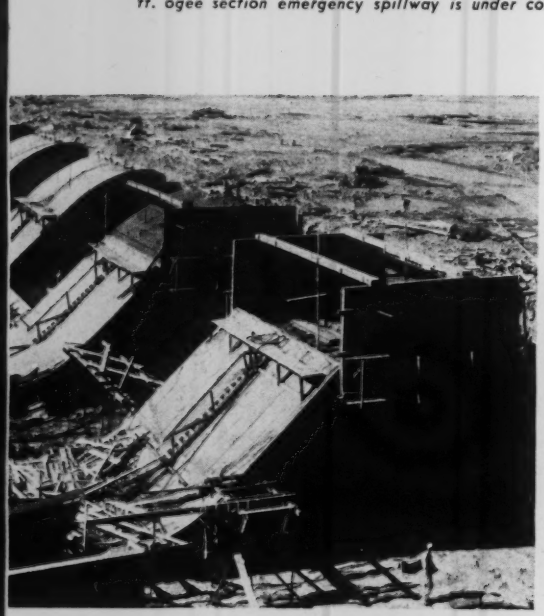
*Housed in the control room behind the tanks are two ozonators, each with a generating capacity of 10 lb. of ozone daily. Ozone is produced by passing filtered and dried air under pressure through the corona produced by the silent discharge of high tension electric current between a series of dielectric plates (ENR Feb. 1, 1940, p. 168).*

*The two tanks, known as "ozonizers," contain the water with which the ozonized air is mixed. Water entering near the top of tank is brought into contact with the ozonized air piped into a porous tube diffuser at the bottom of the water column.*

*Ozone Processes, Inc. of Philadelphia supplied the equipment for the test plant, which is being operated by A. K. Muzzey of that company.*

*Construction was in full swing when this aerial view was taken. The 2,500 ft. long 77-ft. high earthfill dam is taking shape at the extreme right. Through the adjacent abutment rises the 20x22-ft. normal discharge conduit with both its outlet and intake works both to be seen. At left the 740-ft. ogee section emergency spillway is under construction. This will play no part in normal operation of the dam.*

# Wappapello Dam to assist in control of St. Francis floods



*Construction of the 33-ft. high ogee section spillway is built in alternate blocks 31 ft. long. A crane (not shown) working along the downstream side handles forms and places concrete.*

*Here the stilling basin of the normal discharge conduit is under construction. Note baffles and head wall. Aerial view at top shows conduit in operation and baffles submerged.*

Scheduled for completion in June, the Wappapello Dam, seventeen miles northeast of Poplar Bluffs, Mo., will control runoff from 1,310 sq.mi. on the headwaters of the St. Francis River in the Ozark Hills.

The dam, which is to create a 6,000-acre conservation lake, will complete the first step in the control of the St. Francis River through southeast Missouri and northeast Arkansas. This dam, in conjunction with the levee system to be built, will provide flood protection for upward of 1,300,000 acres of rich alluvial land in the St. Francis River Basin. The leveed floodway immediately below the dam will be built to safely pass up to 18,000 c.f.s. through the control structure.

Wappapello reservoir has relatively low cost storage for large flood volumes. reservoir capacity, therefore, is sufficient to insure against spillway action except under an extremely remote contingency. The reservoir at spillway crest level will have an area of about 23,000 acres and will have a storage capacity at that level of about 625,000 acre-feet, including the conservation pool which contains approximately 40,000 acre-feet.

## Unions and contractors convicted in trust case

The government won its first real victory in building trust cases when two unions, one contractor and six individuals were convicted by jury in Federal District Court in Chicago, May 22, for violation of the Sherman Act. The charges were based on subcontractor relations for cut stonework on the South Side vocational school building, Chicago.

William R. Goss, general contractor, sublet the stone to the Indiana Limestone Co. and Indian Hill Limestone Co. for stone fabricated in Indiana. Chicago unions protested because no Chicago firm got stonework and because the stone shipped in was fabricated. Carpenters and ironworkers struck in sympathy with stoneworkers, resulting in a compromise whereby one third of the stone was given to Eric F. Skoglund, Chicago stone contractor, for fabrication at the site at an alleged higher price than the Indiana bids.

Convicted were Chicago and Cook County Building Trades Council and Patrick Sullivan and Earl McMahon, president and secretary of the Council; Chicago local of Journeymen Stone-cutters Union and business agent Patrick Culten; John Callahan, an agent for the Bridge and Structural Ironworkers Union; Galloy & Van Etten, stone contractors, Bernard Van Etten of this firm and Max Davison of Simpson and Davison. Galloy & Van Etten had refused to take any stonework at price offered by Goss. Van Etten and Davison were convicted because they are members of the Chicago Cut Stone Arbitration Board, which negotiated agreements and labor relations. Evidence showed that they met with Goss just prior to award to Skoglund. Skoglund and Ernest Heldmaier, chairman of the Arbitration Board, were acquitted. The convicted will appeal at a hearing to be held June 20 by Federal Judge Woodward.

## BRIEF NEWS

APPROPRIATIONS and authorizations actually passed for defense construction by Congress now total $3,420,000,000, according to Office of Production Management statisticians, plus an indeterminate portion of $3,772,000,000, provided for federally financed industrial expansion. Of the construction money $1,894,000,000 is Army; $987,000,000 Navy; and $330,000,000 housing (an additional $150,000,000 has been provided since the compilation was made). Actual federal expenditures to date for defense construction total $1,104,000,000, plus part of $305,000,000 expended for new plant.

## Rehearing of Tacoma case asked by bridge authority

The Washington State Toll Bridge Authority has petitioned the supreme court of that state for a rehearing on its recent decision ordering payment of $600,000 to the three construction firms for building the Tacoma Narrows suspension bridge. The petition asked the court to modify its decision by finding that the state highway department, not the toll bridge authority, actually constructed the bridge. The authority also seeks to escape paying 6 percent interest on the $600,000 to the three companies—Pacific Bridge Co., San Francisco; Columbia Construction Co., Portland, and General Construction Co., Seattle.

If the supreme court grants the petition, it might aid the bridge authority in its attempt to have another suit, now in federal court at Tacoma, transferred back to the Washington State Superior Court. The latter suit involves payment by 22 insurance companies of the $5,200,000 insurance on the bridge.

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## Arkansas road body sued for supplying asphalt

J. A. Gregory, contractor of Jackson County, Ark., has filed suit in the Pulaski Chancery Court at Little Rock, charging that the Arkansas State Highway Commission attempted to enter into competition with private businesses when it signed a contract to supply the city of Augusta, Ark. with hot asphalt mix for a street paving contract. Mr. Gregory asked that the court issue an injunction restraining the highway commission from carrying out the terms of the contract. Mr. Gregory further contended that the asphalt, since it was to be mixed at a plant at Wynne, would cost the highway department $2.41 a ton by the time it was delivered, not including rental on equipment and overhead charges on the preparation.

About 1,750 tons of asphalt mix at $2.40 a ton were contracted for.

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## Defense access roads desired now total 288

Even while the Public Roads Administration's report on defense highways has been on the President's desk awaiting transmission to Congress, the problem has increased. Road Commissioner MacDonald said last week that up to the beginning of this month 288 access road needs have been certified by war, navy and defense officials, and at least 50 more are known to be coming up. Total access road needs immediately in sight will cost $350,000,000. Last February when the report was submitted, 192 access road sites were known with a total cost of $220,000,000. Appropriation of $150,000,000 was recommended to meet this need.

British Combine photo

### An unusual use for a Bulldozer

*In cleaning up bomb damage debris from the streets of London bulldozers are proving unusually effective. The machine shown above is moving the tangled steel work and other material that was thrown into the street during a recent air raid.*

## Ohio engineers organize under new constitution

The Ohio Society of Professional Engineers has been incorporated in the state of Ohio under a new constitution that was adopted in September, 1940, and amended slightly in April to comply with state requirements for incorporation.

The new constitution of the society is notable for state societies of professional engineers in that it provides for five classes of members: honorary, active, surveyor, junior, and student. Only honorary and active members are entitled to vote and to hold office. Active members must be registered professional engineers in the state of Ohio and surveyor members must be registered surveyors. Junior members shall be graduates of an accredited engineering school or an engineering college approved by the Ohio State Board of Registration for Professional Engineers and Surveyors, or shall have had five years of experience in the actual practice of engineering or surveying. Student membership is limited to regular students of at least one year's standing in an accredited engineering college or an engineering college approved by the registration board. Dues for active members are $8, of which $4 constitutes dues for the National Society of Professional Engineers; dues for surveyor members are $4, for juniors $3, and for students $1, which shall be used to pay for a subscription to "The American Engineer," the journal of the national society.

The total membership in the society in April was 617, of which 584 were active members, 25 surveyors, 6 juniors, and 2 students.

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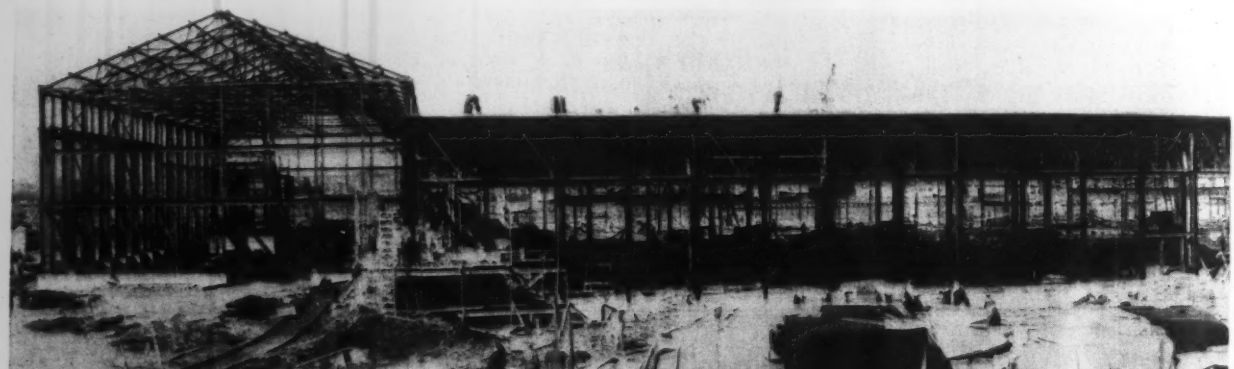
## Contractor wins claim for uncompleted work

The board of education of the city of New York must pay the McGarry Contracting Co. its claim for $24,295, with interest, resulting from extra work involved in excavating the foundations for a school due to buried foundation walls that were not revealed in the borings given to the contractor when he bid on the work. This decision was reached in the Supreme Court of Queens County, New York, in a new trial ordered by the New York Court of Appeals. The Court of Appeals reversed two lower courts, making a finding in favor of the contractor, and ordered a new trial to determine the amount of damages.

In excavating foundations for a public school on 113th St. in New York the contractor encountered buried foundation walls that inspectors for the board of education insisted be removed at no extra cost to the board on the basis of a clause in the specifications that said "The Board of Education shall not be held responsible for any differences between the indications shown on the diagram, chart, plan or description of borings or other subsoil data and actual subsoil conditions that are disclosed by excavation. No damages or additional compensation shall be claimed by or paid to the contractor for any differences in the character of earth to be excavated." The Court of Appeals held that the heavy buried foundation walls did not constitute any "difference in the character of the *earth* to be excavated." It held that removing the old foundations was work for which the contractor was entitled to receive extra compensation.

Further details of the findings of the New York court of appeals are given in an article by Frank Weinstein, attorney, in the issue of Jan. 30, 1941, p. 188.



## New England's first industrial "blackout" plant

*The speed and efficiency characterizing present-day industrial building construction is reflected in the rapidity with which the 1,600-tons of steel for the frame of General Electric Company's "blackout" plant, now under construction at West Everett, Mass., has been completed. The structural steel work, as illustrated above, was erected by the Bethlehem Steel Co. in a little over three weeks from the time the first shipment of material was delivered.*

*Maximum speed was also recorded in the placement of foundation footings by the Raymond Concrete Pile Company, which completed this phase of construction in five weeks. During this period a total of 770 caissons were set at an average rate of about 25 per day.*

*Plans for the new plant, prepared under the direction of J. G. Trudinger, General Electric Company engineer, call for the erection of a one-story "windowless" blackout building, consisting of a main manufacturing section 500x400 ft. with an attached boiler house, test and forge shop 80x300 ft. The plant will provide five unobstructed acres of production floor space. A steel deck roof, which also serves as an acoustical ceiling will be used, and the interior wall facing will be of glazed tile enclosing an open expanse with an 18-ft. ceiling clearance.*

*Due to the windowless design of the building, the problem of heating, lighting and ventilation was of paramount consideration. The entire manufacturing area will be lighted uniformly to 50 foot candles by means of the latest fluorescent lighting units. These units will consist of two 100-watt 60-inch fluorescent tubes mounted in continuous reflectors extending at frequent intervals along the entire length of the building. Certain areas will have additional lighting to increase the foot candle intensity for special production work. The total lighting load will be 600 kw. Internal heat liberation from manufacturing processes will provide all the heating necessary until the outdoor temperature drops below 15 degrees above zero, which will effect a considerable reduction in heating costs. Through the use of a specially designed air-conditioning system, improved ventilating equipment, insulation and acoustical control devices, adequate air and temperature control will be provided.*

*Turner Construction Company, New York, N. Y., are the general contractors. Estimated cost is $5,873,800.*

## WASHINGTON HIGHLIGHTS

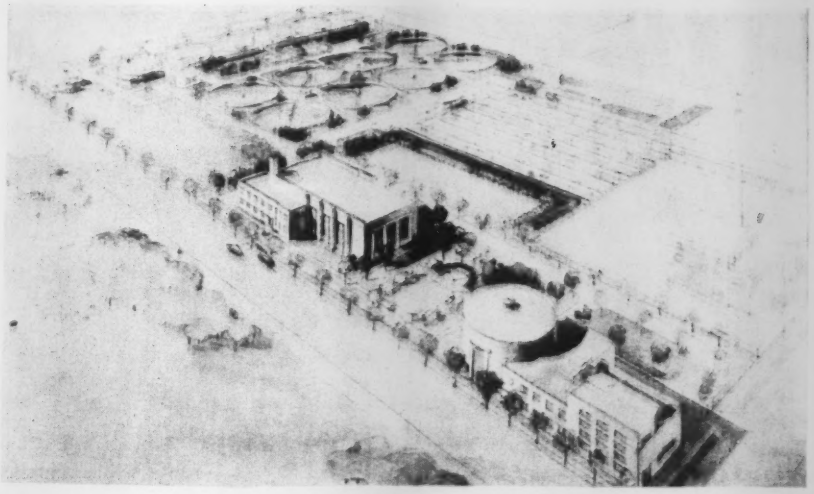
ENDOWED COLLEGES having engineering experiment stations would be enabled to receive federal subsidies, as land-grant colleges now do, under the terms of a revised version of the bill to grant federal aid to such experiment stations. The revised bill provides that the federal government grant to existing stations $25,000 a year outright, plus funds up to $25,000 to match local contributions, to the support of the station. The new version is understood to have received the support of all the interests favoring this legislation, including the land-grant colleges.

EXTENSION for another three years of the FHA-insured repair and modernization loans would be accomplished by a bill which has been favorably reported to the House. The measure would also lengthen the permitted term of such loans to five years from the present three and would also extend for another three years the power of FHA to insure mortgages on existing houses.

MANUFACTURERS of roofing insulation have been asked by the Office of Production Management to eliminate the use of cork except for orders already outstanding and in insulation for refrigerated spaces.

FEDERAL DEFENSE housing projects need not comply with local plumbing codes, according to a ruling of a Tennessee state court, which dismissed a warrant charging violation of the plumbing code in construction of a project in Davidson County. Plumbing was installed in the houses in accordance with a plumbing manual prepared some months ago by the U. S. Bureau of Standards for the guidance of government agencies. The manual is in many respects less restrictive than most local codes now being followed.

ARRANGEMENTS for protection of Reclamation dams against sabotage are now being worked out. It appears probable that funds to cover provision of one or more guards at each of the dams will be inserted by the Senate into the Interior Department appropriation bill. It is not believed that it will be necessary to bar visitors from the dams. Protection would involve, as it now does at Boulder, keeping strangers away from a few critical spots such as the intake towers and taking visitors around the projects in parties accompanied by a guard.



### Jamaica sewage treatment plant 50 percent complete

*Started early in 1940, the $3,000,000 sewage treatment works under construction in New York's borough of Queens is now 50 percent complete; new units costing nearly $1,600,000 have been partially let to contract and will soon be under construction. The Jamaica plant is the latest addition in a group of modern structures erected under a city-wide plan to relieve the pollution problem in New York's rivers and harbors.*

*Other plants along Jamaica Bay include the Coney Island sewage treatment works, originally built in 1935, and now being doubled in size, the 26th Ward plant, construction of which is under way, and the Rockaway treatment works, for which designs are in preparation. When completed these plants will fully remove all sewage pollution from Jamaica Bay and hasten the day when this body of water will become one of the finest recreational areas in the environs of New York.*

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## Ohio engineers organize under new constitution

The Ohio Society of Professional Engineers has been incorporated in the state of Ohio under a new constitution that was adopted in September, 1940, and amended slightly in April to comply with state requirements for incorporation.

The new constitution of the society is notable for state societies of professional engineers in that it provides for five classes of members: honorary, active, surveyor, junior, and student. Only honorary and active members are entitled to vote and to hold office. Active members must be registered professional engineers in the state of Ohio and surveyor members must be registered surveyors. Junior members shall be graduates of an accredited engineering school or an engineering college approved by the Ohio State Board of Registration for Professional Engineers and Surveyors, or shall have had five years of experience in the actual practice of engineering or surveying. Student membership is limited to regular students of at least one year's standing in an accredited engineering college or an engineering college approved by the registration board. Dues for active members are $8, of which $4 constitutes dues for the National Society of Professional Engineers; dues for surveyor members are $4, for juniors $3, and for students $1, which shall be used to pay for a subscription to "The American Engineer," the journal of the national society.

The total membership in the society in April was 617, of which 584 were active members, 25 surveyors, 6 juniors, and 2 students.

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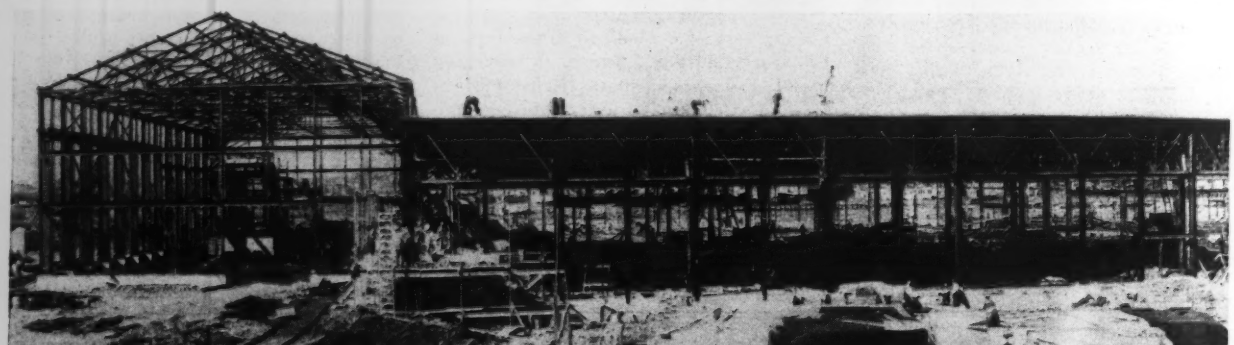
## Contractor wins claim for uncompleted work

The board of education of the city of New York must pay the McGarry Contracting Co. its claim for $24,295, with interest, resulting from extra work involved in excavating the foundations for a school due to buried foundation walls that were not revealed in the borings given to the contractor when he bid on the work. This decision was reached in the Supreme Court of Queens County, New York, in a new trial ordered by the New York Court of Appeals. The Court of Appeals reversed two lower courts, making a finding in favor of the contractor, and ordered a new trial to determine the amount of damages.

In excavating foundations for a public school on 113th St. in New York the contractor encountered buried foundation walls that inspectors for the board of education insisted be removed at no extra cost to the board on the basis of a clause in the specifications that said "The Board of Education shall not be held responsible for any differences between the indications shown on the diagram, chart, plan or description of borings or other subsoil data and actual subsoil conditions that are disclosed by excavation. No damages or additional compensation shall be claimed by or paid to the contractor for any differences in the character of earth to be excavated." The Court of Appeals held that the heavy buried foundation walls did not constitute any "difference in the character of the *earth* to be excavated." It held that removing the old foundations was work for which the contractor was entitled to receive extra compensation.

Further details of the findings of the New York court of appeals are given in an article by Frank Weinstein, attorney, in the issue of Jan. 30, 1941, p. 188.



## New England's first industrial "blackout" plant

*The speed and efficiency characterizing present-day industrial building construction is reflected in the rapidity with which the 1,600-tons of steel for the frame of General Electric Company's "blackout" plant, now under construction at West Everett, Mass., has been completed. The structural steel work, as illustrated above, was erected by the Bethlehem Steel Co. in a little over three weeks from the time the first shipment of material was delivered.*

*Maximum speed was also recorded in the placement of foundation footings by the Raymond Concrete Pile Company, which completed this phase of construction in five weeks. During this period a total of 770 caissons were set at an average rate of about 25 per day.*

*Plans for the new plant, prepared under the direction of J. G. Trudinger, General Electric Company engineer, call for the erection of a one-story "windowless" blackout building, consisting of a main manufacturing section 500x400 ft. with an attached boiler house, test and forge shop 80x300 ft. The plant will provide five unobstructed acres of production floor space. A steel deck roof, which also serves as an acoustical ceiling will be used, and the interior wall facing will be of glazed tile enclosing an open expanse with an 18-ft. ceiling clearance.*

*Due to the windowless design of the building, the problem of heating, lighting and ventilation was of paramount consideration. The entire manufacturing area will be lighted uniformly to 50 foot candles by means of the latest fluorescent lighting units. These units will consist of two 100-watt 60-inch fluorescent tubes mounted in continuous reflectors extending at frequent intervals along the entire length of the building. Certain areas will have additional lighting to increase the foot candle intensity for special production work. The total lighting load will be 600 kw. Internal heat liberation from manufacturing processes will provide all the heating necessary until the outdoor temperature drops below 15 degrees above zero, which will effect a considerable reduction in heating costs. Through the use of a specially designed air-conditioning system, improved ventilating equipment, insulation and acoustical control devices, adequate air and temperature control will be provided.*

*Turner Construction Company, New York, N. Y., are the general contractors. Estimated cost is $5,873,800.*

## WASHINGTON HIGHLIGHTS

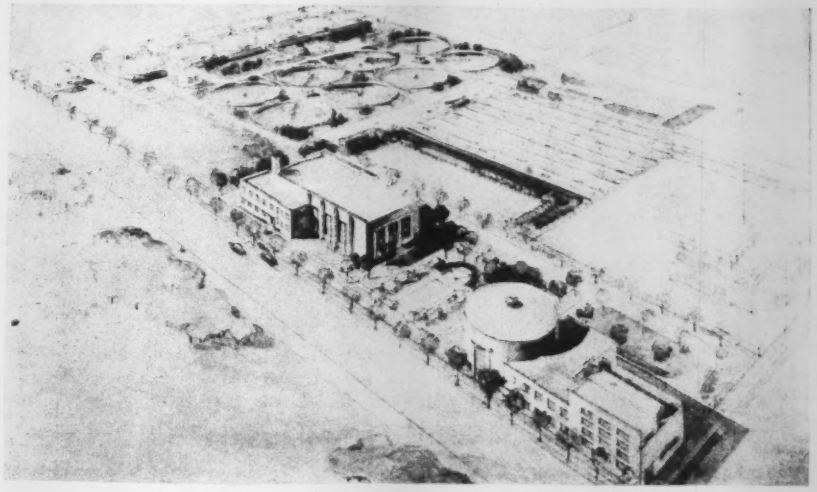
ENDOWED COLLEGES having engineering experiment stations would be enabled to receive federal subsidies, as land-grant colleges now do, under the terms of a revised version of the bill to grant federal aid to such experiment stations. The revised bill provides that the federal government grant to existing stations $25,000 a year outright, plus funds up to $25,000 to match local contributions, to the support of the station. The new version is understood to have received the support of all the interests favoring this legislation, including the land-grant colleges.

EXTENSION for another three years of the FHA-insured repair and modernization loans would be accomplished by a bill which has been favorably reported to the House. The measure would also lengthen the permitted term of such loans to five years from the present three and would also extend for another three years the power of FHA to insure mortgages on existing houses.

MANUFACTURERS of roofing insulation have been asked by the Office of Production Management to eliminate the use of cork except for orders already outstanding and in insulation for refrigerated spaces.

FEDERAL DEFENSE housing projects need not comply with local plumbing codes, according to a ruling of a Tennessee state court, which dismissed a warrant charging violation of the plumbing code in construction of a project in Davidson County. Plumbing was installed in the houses in accordance with a plumbing manual prepared some months ago by the U. S. Bureau of Standards for the guidance of government agencies. The manual is in many respects less restrictive than most local codes now being followed.

ARRANGEMENTS for protection of Reclamation dams against sabotage are now being worked out. It appears probable that funds to cover provision of one or more guards at each of the dams will be inserted by the Senate into the Interior Department appropriation bill. It is not believed that it will be necessary to bar visitors from the dams. Protection would involve, as it now does at Boulder, keeping strangers away from a few critical spots such as the intake towers and taking visitors around the projects in parties accompanied by a guard.



### Jamaica sewage treatment plant 50 percent complete

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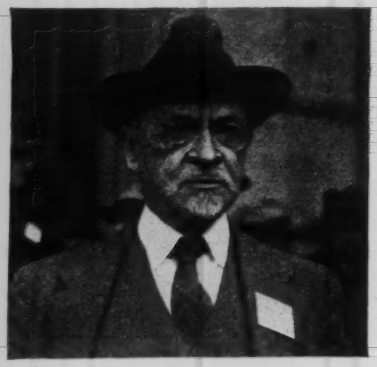
# MEN at WORK



*For loyal service and distinguished competence in the field of municipal public works we nominate EDWARD S. RANKIN (above), sewer division engineer of Newark, N. J. He is now entering his 53rd year of service as an engineer for that city.*

*An important point of the fixed-fee work at Ft. Knox, for which their firm is the architect-engineer, is discussed by A. ELLIOT KIMBERLY (left above), assistant principal engineer with Havens & Emerson, Cleveland, and A. A. BURGER, principal engineer of the same organization. Their Ft. Knox office forms an appropriate background.*

*ED. KNAPIK (left) recently became junior member of the firm of Walter L. Huber and Edward M. Knapik, consulting engineers of San Francisco, following many years of work with Mr. Huber as assistant and associate.*

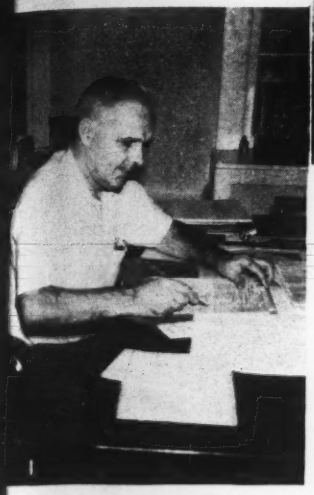
*Defense job of the two above is controlling flood waters around important manufacturing plants at Hartford, Conn., for the U. S. Engineers. J. A. MacALARNEY (left above) is resident engineer on the Park River conduit, and R. E. LEE is area engineer on all flood control work at Hartford.*

*With the job already well advanced E. J. BEAL (left above) and EMIL RUTZ, engineer and superintendent, respectively, for Pearson Construction Co., Benton Harbor, Mich., on two big warehouses of the Jeffersonville, Ind., Quartermaster Depot, discuss how to continue to keep ahead of schedule.*

*LEWIS JONES, Jr., (left) resident engineer for the Texas State Highway Department, and A. McQUOWN of the M. W. Watson Co., Austin, Tex., and Topeka, Kan., look over the latter's job on Texas Route 96 south of Kingsville.*

*Right: E. K. PORTER and MORRIS DEWITT, leading partners of the Porter-DeWitt Construction Co., of Kirkwood, Mo., seem well satisfied with progress they are making on construction of Wappapello Dam for the army engineers near Popular Bluff, Mo.*

*Below: Responsibility for construction of the huge Kentucky Dam being built by TVA on the Tennessee River near Paducah, Ky., rests on the broad shoulders of GEORGE P. JESSUP, project engineer, found by the photographer in a working mood.*



*Above: WM. P. COTTINGHAM, city engineer of Gary, Indiana, has the distinction of operating the first dual disposal plant in which garbage is ground, added to the sewage flow, and the combination waste treated by the activated sludge process.*

*Right: At Fort Ord, Calif., where for 3½ months buildings went up at the average rate of one every 54 minutes, R. M. CONNOR (right) and PAUL B. TICHENOR, project manager and general superintendent, respectively, for Ford J. Twaits and Morrison-Knudsen Co. Inc., confer about progress on the $9,000,000 job their company is carrying out on a lump-sum contract basis.*

*Below: Probably plotting against possible enemy reconnaissance planes are MALCOLM K. MOORE, right, in charge for the U. S. Engineer Department at Windsor Locks, Conn. airport and his assistant C. M. HEARN. This airport will be the first in continental U. S. to use dispersion of facilities and camouflage to prevent easy spotting of the field.*

*Above: Snapped on the big levee project at Kansas City, Kan., which will keep the Missouri River floodwaters out of the Fairfax industrial district, were, left to right, LEE METCALF, B. V. REANY, and GORDON HAMILTON. Reany is resident engineer on the project for the U. S. Engineer department, while the other two make up the firm of Metcalf & Hamilton, contractors on the job. The job isn't as hazardous as this picture indicates, for Hamilton got that broken arm by tripping in his own front yard.*

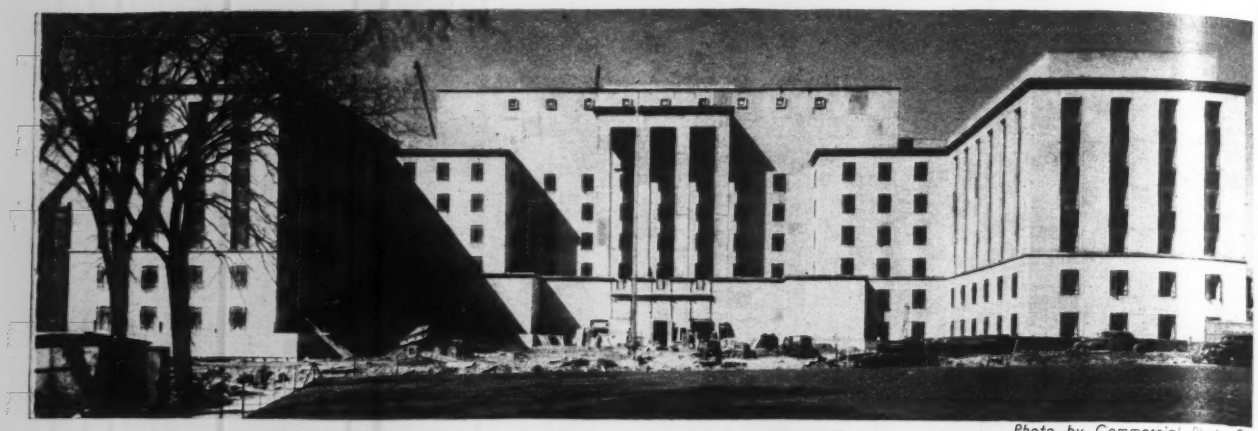
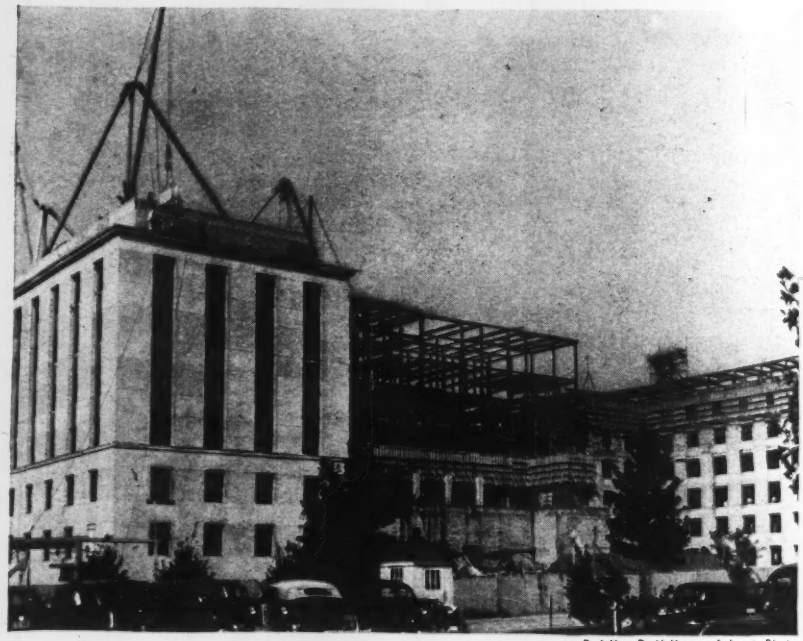


Photo by Commercial Photo Co.

*Front entrance of War Department's new quarters in Washington is shown by view above. Exterior walls are faced with limestone while concrete is used for a back-up.*



Public Buildings Admn. Photos

*Uneven progress on different parts of the building is revealed by this photograph. Columns 7 ft. apart frame pilasters that separate the windows.*

# War Department gets a new home

Six months ahead of scheduled completion date, one wing of the new War Department building in Washington, D. C., was ready for occupancy April 1, and the remainder of the portion now under construction is expected to be finished within a month or two. The present 306x355-ft. structure is only a quarter section of the ultimate building that is planned.

Architecturally the building follows an unusual floor plan. The first section is in the shape of a serif H with an additional wing off one side of the H's crossbar; the final structure will cover a large area in a very irregular pattern, intended to mask the otherwise overpowering size and to give maximum light and air.

The building's riveted steel frame gains unusual rigidity through the use of a double wall column adopted primarily for ease in handling air-conditioning ducts. The wall columns, instead of being a single member, are made up of two lighter H-beams about 7 ft. apart with an air duct immediately behind them; the two columns are incased in concrete to make a composite steel-concrete column. The steel serves only to bear the erection weight of the frame since with construction complete the building's weight is borne by the composite columns.

Exterior walls use a concrete back-up, rather than the usual brick, and they are faced with shot-sawn limestone.

The foundation is carried to rock, at an average depth of 55 ft., on 430 concrete piers varying in diameter from 30 to 72 in. The piers were placed by the open caisson method inside telescoping steel sections 8 to 10 ft. long. Some of these were placed by ordinary excavation but others required a special boring machine.

Erection was more or less standard except for the uneven progress of different parts of the structure, which resulted from an unusual foundation condition that developed as the job progressed. Steel, other materials, and mechanical equipment are handled with two stiff-leg derricks on the structure, while six stone-handling cranes as well as several crawler cranes are also used but work from the ground.

Seven stories in height, the present unit has a floor area of 310,000 sq.ft. It is being built by John McShain, Inc., Philadelphia, in accordance with a $4,328,000 general contract. Work started Feb. 21, 1940 with completion required in 450 calendar days. The entire project, for which all money is not available, will cost about $26,000,000 with land. The Public Buildings Administration was the designer with Gilbert S. Underwood and Wm. Dewey Foster, Washington, D. C., consulting architects.

# MEN AND JOBS

MAJ. GEN. WILLIAM D. CONNOR, retired, and DEAN JAMES H. GRAHAM of the University of Kentucky Engineering School, are at work on the army's construction program. General Connor, for many years commandant of the Military Academy and Army War College, has been called to active duty as chairman of the Quartermaster General's Construction Advisory Committee. Dean Graham, who as colonel had charge of A.E.F. heavy construction in France during the World War, was made technical adviser to Brig. Gen. Brehon B. Somervell, chief of the construction division. General Connor displaces BRIG. GEN. GEORGE R. SPALDING, retired, who asked to be relieved because of ill health.

FENNER H. WHITLEY, instructor in sanitary engineering at New York University, has been assigned to MacDill Field, Tampa, Fla., and took up duties as first lieutenant, Sanitary Corps, effective May 16.

J. W. PRAY has been named manager of the waterworks, hydroelectric, and sewage disposal plants at Fort Dodge, Iowa, and J. L. PARSONS has been appointed engineer of streets for the same city.

GILBERT E. MORRIS, of Glendale, Calif., has been appointed superintendent of buildings for the City of Los Angeles, in which position he will have charge of enforcing all city building ordinances, assisted by a staff of 280 employees in the department of building and safety. A civil engineering graduate of the University of California in 1924, Mr. Morris' experience includes engineering design for the City of Glendale; bridge engineering for Los Angeles; a year as senior structural engineer with the California division of architecture, and a short period with the firm of Deuel and Schoeller, of Los Angeles. He joined the Los Angeles department of building and safety, for the second time, in 1935, and was assistant chief building structural engineer when the death of Clyde Makutchan left vacant the office of superintendent.

Gilbert E. Morris

PORTER J. PRESTON, of Denver, Colo., has been employed as consulting engineer for Oklahoma City on the construction of the Bluff Creek reservoir. Mr. Preston is a retired engineer from the U. S. Reclamation Service. His most recent assignment was as supervising engineer on the construction of the Colorado-Big Thompson project at Estes Park, Colo.

CAPT. FRANK RAY, formerly at New Orleans, La., is now in charge of construction activities at Fort Benjamin Harrison, Ind., succeeding LT. COL. HEAP, who will remain as post quartermaster.

HENRY W. DAWSON, for the past six years superintendent for the Granite Bituminous Paving Co., has been appointed street commissioner at St. Louis to succeed L. J. GUALDONI, who resigned recently. Prior to his connection with the paving company, Dawson served as chief inspector in the office of the president of the St. Louis board of public service.

LT. COMDR. PAUL A. E. FLUX, Civil Engineering Corps, U. S. Navy, formerly highway engineer in the bureau of design, Connecticut State Highway Department, has been recalled to active duty and assigned as outside superintendent in the public works department at the Boston Navy Yard.

GLENN ALLEN, Indiana state highway district engineer at Vincennes, Ind., resigned effective April 30 to enter private contracting business. He will be succeeded by FRED B. MENDENHALL, who is now at present district engineer at Fort Wayne.

MAJ. GEN. LYTLE BROWN, of Franklin, Tenn., retired chief of the Army Engineers, has gone to Washington to take up his work as Tennessee's industrial representative—a position created by Governor Cooper to provide representation for the state's national defense industries at the Capital. General Brown was chief of the engineers from 1929 to 1933.

R. E. POWELL, Raleigh, N. C., has been appointed public relations director of the North Carolina Highway and Public Works Commission to succeed William M. Jones, deceased.

OLIVER C. HUME, civil engineer, has been appointed county surveyor for Mobile County, Ala., succeeding John A. Boudousquire, deceased.

FRANCIS E. FIELD of Biltmore, N. C., has been appointed manager of the Defense Contract Service of the Office of Production Management in the Charlotte, N. C., district of the Federal Reserve Bank of Richmond. The district embraces most of North and South Carolina. Mr. Field's office will serve as a clearinghouse of information for contractors and subcontractors.

JAMES KIP FINCH, Renwick professor of civil engineering at Columbia University, has been appointed associate dean of the faculty of engineering. Professor Finch received the degree of Civil Engineer from Columbia in 1906, and the Master of Arts degree in 1911. He has been a member of the staff since 1910, having been appointed Renwick professor in 1930 and head of the civil engineering department in 1932. He takes over the administrative duties of JOSEPH W. BARKER, dean of the engineering school, who will be on leave until September.

James Kip Finch

W. VANCE BAISE was reappointed chief highway engineer of the North Carolina Highway and Public Works Commission at a May 2 meeting of the newly-reorganized commission.

WILLIAM J. FAULKNER, for six years city engineer of Eureka, Kan., has resigned to go with the Allis Chalmers Co. of Milwaukee, Wis. W. S. BARRACKMAN of Howard, Kan., takes Mr. Faulkner's place.

WILLIAM R. FREDERICK, JR., assistant engineer designer with the board of water supply, New York City, was called to active army duty in April. He is stationed at Camp Jackson, S. C., with the rank of captain in the field artillery.

MAJ. PAUL M. BREWER, construction quartermaster on Camp Wolters, Mineral Wells, Tex., has left for Milan, Tenn., to assume a new assignment as constructing quartermaster at the $14,000,000 Wolf Creek Army Ordnance plant, which is scheduled for completion June 1.

A. W. BUFORD, Forrest City, Ark., former highway department engineer, has been named district highway engineer with headquarters at Wynne, Ark., succeeding W. H. CUSHMAN.

HOMER A. HUNTER, former executive director of the Ft. Worth Housing Authority, became acting director of public works at Dallas, Tex., succeeding E. A. BAUGH, who resigned recently. Mr. Hunter was appointed by V. R. SMITHAM, who has been named acting city manager at Dallas during the absence of JAMES V. ASTON, who has been called into military service.

## Heads Canadian work

*John M. R. Fairbairn, retired chief engineer of the Canadian Pacific Ry., has been appointed director of works and buildings for the naval service of Canada's department of national defense. A graduate of the University of Toronto, a past president of the Engineering Institute of Canada, and an honorary member of the American Society of Civil Engineers, Mr. Fairbairn closed a long career of engineering service when he retired in 1938 after serving for 20 years as chief engineer of the C. P. R. He now leaves his retirement, which has been spent in Montreal for this important national service.*

## Abe Smith, contractor, killed in Chicago

Abe Smith, head of the Chicago contracting firm of A. Smith & Company, associated with the Lipman Construction Co., in the construction of the ill-fated Herman Gardens housing project in Detroit, was killed May 20 when he fell or jumped from the 20th floor fire-escape of an office building in downtown Chicago. He was 55 years old. Mr. Smith and W. S. Lipman of the Lipman firm were fighting extradition to Detroit in connection with bribery charges in obtaining the contract for the Herman Gardens project. They were both under indictment charged with bribing Detroit councilmen to accept their low bid on a concrete construction alternate for the project. The Smith and Lipman contract has been voided and new bids are being asked June 3.

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## A.S.T.M. meets June 23

Some 17 separate technical sessions are being scheduled for the 44th annual meeting of the American Society for Testing Materials to be held at the Palmer House, Chicago, during the week beginning June 23. A joint session will be held with the Western Society of Engineers. Three topics of persistent local interest to be studied are: Water supply, sewage disposal, and sanitary conditions.

# JOBS OF THE WEEK

***TIN SMELTING PLANT, Texas City, Tex.***

Ford, Beacon & Davis, Inc., New York, N. Y., will build a tin smelter plant for Tin Smelting Corp., Texas City. The work, which is estimated to cost $3,000,000, will be financed by the Reconstruction Finance Corp. N. V. Billton-Maatschappij, c/o Van der Broek, New York, will operate the plant when complete. Lurgis Pitkin, Inc., Texas City is engineer for the project.

***AIRBASE, Valparaiso, Fla.***

Smith Engineering & Construction Co., Noonan Construction Co., Dyson & Co., all of Pensacola, Fla., and Wilson Construction and Supply Co., Tallahassee, Fla., have been awarded the contract for the Valparaiso airbase including utilities and appurtenances, and paving three auxiliary fields at Eglin Field. Yonge & Hart, Pensacola, has the contract for the architectural and engineering services. Contracts were awarded by the Office of Production Management with the work being done for the U. S. Engineers, Washington, D. C.

***SHIPYARD, Los Angeles, Calif.***

Los Angeles Shipbuilding & Drydock Co., Inc., Wilmington, Calif., has been awarded a supplementary contract for constructing and installing additional facilities. Work includes warehouse, and joiners, pattern, sheet metal, and welding shops. Construction of garage, railroad track, light and distribution system will also be required. Work, which is estimated to cost $2,237,000 is being done for Bureau of Yards & Docks, Navy Department, Washington, D. C.

***RESIDENTIAL DEVELOPMENT, New Hyde Park, N. Y.***

Gross-Demmerman, Inc., Jamaica, N. Y., will construct 296 houses at Hillside Ave. and New Hyde Park Rd., with its own forces. First unit of 43 houses will cost $258,000. Total expenditure is estimated at $1,800,000. J. H. Burmeister, Jamaica, is architect for the work.

***PIER, Bremerton, Wash.***

A. W. Quist & Sound Construction Co., Seattle, Wash., has been awarded contract for construction of a 90x730-ft. reinforced-concrete pier, including steam, air and salt-water lines and the electrical distribution system. The work is being done for the Bureau of Yards & Docks, Navy Department, Washington, D. C., and is estimated to cost $1,278,000.

***HOUSING, Bethlehem, Pa.***

A. J. Paretta Contracting Co., Inc., New York, N. Y., has the contract for constructing a 320-unit housing project for the Bethlehem Housing Authority, Bethlehem, Pa., of the U. S. Housing Authority. The job will cost $1,058,330. Lovelade & Spillman, Bethlehem, Pa., are architects for the work.

***GASOLINE PIPE LINE, Louisiana and North Carolina***

Plantation Pipe Line Co., New York, N. Y., awarded the contracts for furnishing the pipe for a 1,261-mi. gasoline pipeline from Baton Rouge, La., to Greensboro, N. C., to the National Steel Corporation of Pittsburgh, Pa.; Jones & Laughlin Steel Corp., Pittsburgh, Pa., Youngstown Sheet & Tube Co., Youngstown, O.; Republic Steel Corp., Pittsburgh, Pa.; and Spang Chalfant, Inc., Pittsburgh, Pa. Estimated cost of the work contracted for is $8,500,000. Total cost of line, including pipe, is estimated at $15,000,000.

***HANGAR, Robertson, Mo.***

Lecoutour-Parsons Construction Co., St. Louis, Mo., has received the contract for completing the hangar, assembly and repair shops, and barracks for the U. S. Naval Reserve Aviation Base. The work is being done by the Bureau of Yards & Docks, Navy Department, Washington, D. C., and is estimated to cost $941,034.

***POWER PLANT, Arvida, Que.***

Foundation Co. of Canada, Ltd., Montreal, Que., will construct extensions to power plant at Chute-a-Caron to increase the plant's capacity 130,000 hp. Saguinay Power Co., Ltd., Montreal, is doing the work, which is estimated to cost $1,000,000.

***GUNNERY SCHOOL, Panama City, Fla.***

C. C. Moore Construction Co., Inc., Panama City, Fla., and Paul H. Smith Construction Co., Tampa, will construct a flexible gunnery school at Panama City for War Department, Washington, D. C., under terms of a $3,104,379 contract. Southern Engineering & Architectural Co., Jacksonville, received the contract for the engineering and architectural services.

***FACTORY, Cleveland, O.***

A. M. Higley Co., Cleveland, O., will construct a one-story, 343x683-ft. main factory building, one-story, 163x252-ft. castings building, a two-story, 61x594-ft. personnel building, a three-story, 41x50x292 ft. office building and one-story, 89x99-ft. boiler plant for the Cleveland Graphite Bronze Co., Cleveland. Total estimated cost is $3,000,000. Fred Salzman, Cleveland, is engineer for the work and John H. Graham, Cleveland, is architect.

NOTE—Additional bidding and contract news on over 800 projects large and small appear in the Construction News section beginning on page 15.

## OBITUARY

ALBERT THOMAS LAING, retired associate professor of civil engineering at the University of Toronto, died at his home in Toronto, May 16. A graduate of the old School of Practical Science, of Toronto, Professor Laing joined the staff of the school soon after his graduation, and continued on the staff when the school became the Faculty of Applied Science and Engineering of the University of Toronto. For many years he was secretary of the faculty. He retired from active service in 1934.

ALAN MACDOUGALL JONES, 67, prominent Canadian engineer, died May 15 at Montreal, Que. Mr. Jones, after graduation from the Royal Military College of Canada, worked on the Chicago drainage canal and the South Indiana R.R. Following his return to Canada in 1905, he was engaged in many public works projects.

BASIL H. FRASER, 71, who retired from the Canadian department of marine and fisheries in 1927 as chief engineer after four years in that office, died recently at Santa Monica, Calif. He graduated from the Royal Military College, Kingston, Ont., and several years later entered the government employ as an engineer in the marine department.

GEORGE RALPH MARCH, 53, engineer of the Pennsylvania public utilities commission, died at Harrisburg, May 22. Mr. March had worked with Johnson & March, New York, Stier-March Construction Co., New York; and Barber Asphalt Paving Co., Philadelphia, Pa. He was a graduate of the University of Pennsylvania.

THOMAS G. HASTIE, 76, civil engineer who retired 6 years ago after more than 30 years with the Great Northern Ry., died May 14 at Seattle.

B. F. NUNNELLY, Sr., 72, formerly of Atlanta, Ga., and widely known railroad contractor and builder, died at Cartersville, Ga., May 18.

GEORGE E. TAMM, a partner in the firm of Mackie, Thompson & Tamm, contractors of Chicago, died May 19 at his home in LaGrange, Ill.

CHARLES H. FOSDICK, 60, a public works engineer for nearly 40 years and superintendent of highways for Erie County, N. Y., for 20, died May 15, at Hamburg, N. Y. For 19 years he was on the engineer staff of the state public works department. Mr. Fosdick's first assignment as an engineer for the state was in 1900 on the preliminary surveys for the Erie barge canal. He was transferred to Buffalo in 1906, and became a county engineer in 1919. In 1934, he was appointed superintendent of highways and retired in 1939.

LORENZO R. THOMPSON, construction contractor of Meridian, Miss., died May 14 following an accident.

WILLIAM H. CADWELL, 78, civil engineer of New Britain, Conn. and president of the Beaton & Cadwell Mfg. Co., died May 21. He had been chairman of the Connecticut state board of civil engineers and a member of the Connecticut commissioners of rivers, harbors and bridges. He had served as assistant city engineer, sanitary engineer and city surveyor for New Britain, Conn. Mr. Cadwell designed New Britain's sewerage system. He also worked as consulting engineer for the Panama Street Ry. Co.

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### Western road officials to meet June 17-20

The Western Association of State Highway Officials will hold its 20th Annual meeting at Casper, Wyo., June 17-20. Topics to be discussed include: financing national defense highways; highway safety, planning and taxes; and the highway contractor and his future. A total registration of 300 is expected, according to C. F. Seifried, chief engineer of the Wyoming highway department and program chairman.

## CONTRACTS AND CAPITAL

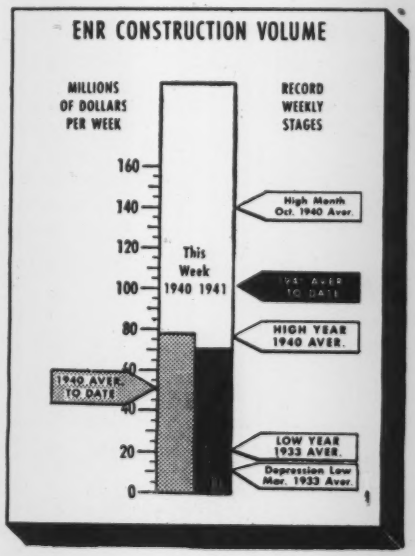
ENGINEERING CONSTRUCTION awards for the short week caused by the early closing for the Memorial Day holiday total $70,368,000, a decline of 10 percent from the volume for the corresponding 1940 week.

Private awards are 60 percent greater than in the week last year, but public construction is 32 percent lower. A decline of 52 percent in federal contracts is responsible for the drop in public construction, as state and municipal work is 17 percent above a year ago.

For 1941 to date, the construction total, $2,252,182,000, is 98 percent higher than in the opening 22-weeks of 1940. Private awards for the period are 63 percent higher, and public construction is 117 percent higher, due to the 546 percent increase in federal work.

In the classified construction groups, gains over the 1940 week are in waterworks, sewerage, industrial and public buildings, streets and roads, and unclassified construction. Increases over a week ago are reported in all of the above classes of work, and in addition, commercial buildings show a gain.

New capital for construction purposes for the week totals $34,755,000, a 503 percent increase over the total for the corresponding 1940 week. The current week's financing is made up of $22,500,000 in federal appropriations for construction, $7,938,000 in state and municipal bonds, $2,200,000 in corporate security issues, and $2,117,000 in RFC loans for private industrial expansion.




### CONTRACTS

(Thousands of dollars)

| | Week Ending May 30 1940 | May 22 1941 | May 29 1941 |
|---|---|---|---|
| Federal | $42,365 | $13,331 | $20,175 |
| State & Municipal | 17,906 | 22,452 | 20,876 |
| Total public | $60,271 | $35,783 | $41,051 |
| Total private | 18,304 | 16,563 | 29,317 |
| TOTALS | $78,575 | $52,346 | $70,368 |
| Cumulative 1941 (22 weeks) | | | $2,252,182 |
| 1940 (22 weeks) | | | $1,136,853 |

Note: Minimum size projects included are: Waterworks and waterways projects, $15,000; other public works, $25,000; industrial buildings, $40,000; other buildings, $150,000.

### NEW PRODUCTIVE CAPITAL

| | Cumulative 1940 22 weeks | 1941 22 weeks |
|---|---|---|
| NON-FEDERAL | $581,403 | $380,443 |
| Corp. Securities | 75,944 | 111,542 |
| State & Mun. | 421,305 | 217,005 |
| U.S.H.A. loans | 78,430 | 22,550 |
| R.F.C. loans | 5,724 | 29,346 |
| FEDERAL | | $2,891,337 |
| TOTAL CAPITAL | $581,403 | $3,271,780 |

### FHA MORTGAGES

| | Week Ending May 25 1940 | May 17 1941 | May 24 1941 |
|---|---|---|---|
| Selected for appraisal* | $29,798 | $35,266 | $34,500 |
| Cumulative 1941 (21 weeks) | | | $590,589 |
| 1940 (21 weeks) | | | $504,080 |

* Subject to revision.

### ENR INDEX NUMBERS

| | | 1913 | 1926 |
|---|---|---|---|
| Index Base=100 | | | |
| Construction Cost | May '41 | 255.55 | 122.84 |
| Building Cost | May '41 | 209.24 | 113.11 |
| Volume | Apr. '41 | 322 | 141 |

# CONTRACT UNIT PRICES

**What contractors are bidding on different kinds of construction work**

## CHARENTON FLOODGATE LOUISIANA

OWNER: U. S. Engineer Office, New Orleans, La.; Lt. Col. C. Kittrell, district engineer.

PROJECT: Construction of reinforced concrete floodgate structure equipped with manually-operated steel sector gates, including the steel sheet piling cutoff and retaining walls with their anchorages, timber foundation piling, earth excavation and fill, riprap, dolphins and all other appurtenant work. Structure located in the Charenton Intracoastal Canal Levee, approximately one mile north of Charenton, La.

CONDITIONS: Contractor to furnish all materials and complete work in 300 days. Transportation facilities to the vicinity of work are afforded by the Texas & New Orleans RR., and Louisiana State Highway 129. Floating plant may reach the site of the work, by three routes. Minimum wage rates specified are: skilled labor, 75 to 90c.; semi-skilled, 40 to 65c.; and common labor, 30c. per hr.

BIDS: Eight bids were received April 7, 1941, ranging from the contract low of $219,218 to $360,182. Engineer's estimate, $278,104.

LIST OF BIDDERS:

1. Pittman Bros. Constr. Co., New Orleans, La. ..... $219,218
2. R. P. Farnsworth & Co., Inc., New Orleans, La. ..... 224,684
3. Norman Constr. Co., Lake Charles, La. ..... 230,274
4. Pittsburgh-Des Moines Steel Co., Des Moines, Iowa ..... 231,497
5. Austin Bridge Co., Austin, Tex. ..... 254,261
6. Newsom Bros. & J. W. Snowden, Columbia, Miss. ..... 296,449
7. John Riess, New Orleans, La. ..... 299,245
8. McWilliams Dredging Co., Chicago, Ill. ..... 360,182

| Item | Quan. | Unit Prices (1) | (2) | (3) |
|---|---|---|---|---|
| 1. Structure excavation | 31,300 c. y. | $0.43 | $0.31 | $0.2875 |
| 2. Channel excavation | 52,300 c. y. | .3225 | .28 | .111 |
| 3. Backfill | 22,150 c. y. | .375 | .34 | .44 |
| 4. Untr. timper piles (under struct.) | 31,760 l. f. | .365 | .41 | .86 |
| 5. Steel sheet piling | 9,880 s. f. | 1.05 | 1.08 | 1.33 |
| 6. Headwall anchors | 4 ea. | 250.00 | 468.00 | 941.00 |
| 7. Treated timber pile dolphins | 4 ea. | 300.00 | 438.00 | 630.00 |
| 8. Concrete, Class B | 4,540 c. y. | 11.20 | 12.06 | 12.89 |
| 9. Reinforcing steel | 810,000 lb. | .045 | .045 | .046 |
| 10. Control houses | 2 ea. | 900.00 | 596.00 | 1,050.00 |
| 11. Sector gates, embedded, attached items | L. S. | 37,800.00 | 38,400.00 | 28,020.00 |
| 12. Miscellaneous metalwork | 28,150 lb. | .08 | .13 | .26 |
| 13. Riprap | 1,720 c. y. | 8.00 | 10.96 | 8.40 |
| 14. Handrail (excl. sector gates) | 222 l. f. | 5.00 | 5.40 | 5.67 |
| 15. Ladders (struc. walls only) | 180 l. f. | 5.00 | 4.88 | 5.00 |
| 16. Operating machinery | L. S. | 9,500.00 | 7,430.00 | 7,560.00 |
| 17. Electrical work | L. S. | 2,000.00 | 2,678.00 | 1,600.00 |

## BRIDGE, KENTUCKY

OWNER: Kentucky State Highway Dept., Frankfort, Ky.; H. E. Rudy, resident engineer, West Point, Ky.

PROJECT: Construction of substructure and superstructure of highway bridge over Salt River, at West Point, Ky., near Fort Knox, on the Louisville-Elizabethtown Road. Approximate length, 0.166 miles. Superstructure consists of four 100-ft. plate girder spans, and one 470½-ft. continuous plate girder unit. Roadway 48-ft. wide; two sidewalks, 2½-ft. wide.

CONDITIONS: Contractor to furnish all materials and complete substructure work in 180 days. Rail, water and highway transportation facilities available. Bridge to be located near Fort Knox, and will be required to carry armored cars and other mechanical equipment stationed there. Wage rates are: skilled labor, $1.12½ to $1.50 per hr.; semi-skilled, 75c. to $1.25; and common, 60c. per hr.

BIDS: Three bids were opened on the substructure April 11, 1941, ranging from the contract low of $279,873 to $331,595. Three bids were received on the superstructure April 25, 1941, ranging from the contract low of $384,375 to $421,646.

### Substructure

LIST OF BIDDERS:

1. Ryan Constr. Corp., Evansville, Ind. (contract) ..... $279,873
2. L. G. Arnold, Inc., Eau Claire, Wis. ..... 284,513
3. Charles E. Cannel Co., Inc., Louisville, Ky. ..... 331,595

| Item | Quan. | Unit Prices (1) | (2) | (3) |
|---|---|---|---|---|
| 1. Class A concrete | 4,883.1 c. y. | $17.10 | $19.50 | $20.00 |
| 2. Reinforcing steel | 719,450 lb. | .047 | .05 | .05 |
| 3. 12-in. steel piles | 23,150 l. f. | 2.50 | 2.20 | 2.75 |
| 4. 14-in. concrete piles | 11,650 l. f. | 2.50 | 3.20 | 3.00 |
| 5. Struct. excav., common, Item 1 | 4,780 c. y. | 13.30 | 10.50 | 20.00 |
| 6. Struct. excav., common, Item 2 | 2,960 c. y. | 4.00 | 5.00 | 1.25 |
| 7. Wrought iron steps | 48 ea. | 3.00 | 2.50 | 1.00 |

### Superstructure

LIST OF BIDDERS:

1. Mt. Vernon Bridge Co., Mt. Vernon, Ohio (contract) ..... $384,375
2. Bethlehem Steel Co., Bethlehem, Pa. ..... 410,493
3. American Bridge Co., Cincinnati, Ohio ..... 421,646

| Item | Quan. | Unit Prices (1) | (2) | (3) |
|---|---|---|---|---|
| 1. Structural steel | 3,543,340 lb. | $0.084 | $0.085 | $0.084 |
| 2. Lead plates | 2,150 lb. | .15 | .11 | .15 |
| 3. Class A concrete | 1,361.8 c. y. | 30.00 | 31.00 | 36.00 |
| 4. Class D concrete | 86.2 c. y. | 40.00 | 81.00 | 73.00 |
| 5. Reinforcement steel | 275,170 lb. | .06 | .055 | .061 |
| 6. Creosoted timber | 8 M bm. | 200.00 | 130.00 | 260.00 |
| 7. Remove exist. structures | L. S. | 24,000.00 | 43,700.00 | 49,500.00 |

## CLEARING AND GRADING AIRPORT, AJO, ARIZONA

OWNER: Civil Aeronautics Administration, U. S. Engineer Office, Los Angeles, Calif.

PROJECT: Clearing, grubbing, excavating, grading, fencing and construction of all drainage facilities at Ajo Municipal Airport, about five miles north of Ajo, Pima County, Ariz., on the Ajo-Gila Bend Highway. Fence to consist of barbed-bottom, woven wire field fencing, and two strands of barbed wire above woven wire, all supported by steel posts, certain of which shall be braced and set in concrete.

CONDITIONS: Contractor to furnish all materials and complete work in 60 days. Railroad and highway transportation facilities available. Wages prevailing in area will be paid.

BIDS: Six bids were opened March 10, 1941, ranging from the contract low of $57,306 to $72,068.

LIST OF BIDDERS:

1. Tiffany Constr. Co., Phoenix, Ariz. (contract) ..... $57,306
2. L. D. Richardson & Co., Beverly Hills, Calif. ..... 58,132
3. J. A. Casson Co., Hayward, Calif. ..... 62,573
4. Nathan A. Moore, Moorpark, Calif. ..... 64,783
5. Tanner Constr. Co., Phoenix, Ariz. ..... 66,512
6. W. E. Callahan Constr. Co., and Gunther & Shirley Co., Los Angeles, Calif. ..... 72,068

| Item | Quan. | Unit Prices (1) | (2) | (3) |
|---|---|---|---|---|
| 1. Clearing and grubbing | 320 ac. | $10.00 | $15.00 | $18.00 |
| 2. Rough grading | 127,800 c. y. | .17 | .18 | .20 |
| 3. Fine grading | 585,700 s. y. | .034 | .03 | .03 |
| 4. Oiling landing areas | 220 ton | 17.00 | 18.00 | 18.00 |
| 5. 15-in. corr. metal pipe | 510 l. f. | 2.50 | 2.65 | 3.00 |
| 6. 18-in. corr. metal pipe | 720 l. f. | 3.00 | 3.00 | 3.25 |
| 7. 24-in. corr. metal pipe | 184 l. f. | 4.00 | 4.15 | 5.00 |
| 8. Catch basin | 3 ea. | 125.00 | 120.00 | 100.00 |
| 9. Fencing | 20,600 l. f. | .20 | .20 | .22 |
| 10. Gate | 2 ea. | 30.00 | 21.00 | 50.00 |